Health Beliefs Affecting Exercise Patterns

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HEALTH BELIEFS AFFECTING EXERCISE PATTERNS

An abstract of a Thesis by
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The problem. This study sought to ascertain the differences in health beliefs as a function of self-reported exercise patterns. A sample of 112 nurses participated in this study.

Procedure. The Health Perceptions Questionnaire (HPQ) by John Ware, Jr. (1976) was utilized to collect data on health beliefs. A second questionnaire was prepared by the investigator and asked for the usual exercise pattern of the individual. Demographic variables were also studied.

Findings. This study found there was no difference in health beliefs and self-reported exercise patterns in this population at a significance level of .05. There was a difference in health beliefs for the age groups of 20-30 and 40-50 on the HPQ subscale "rejection of the sick role."

Conclusions. This study suggests a need for continued study and the development of health education programs to improve exercise patterns both for nurses and for the general public.

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Chapter I

INTRODUCTION

Physical exercise is becoming increasingly popular as a means of health maintenance. Both physical and psychological benefits are attained by regular exercise. Blomquist (1981) listed the following benefits of exercise:

1. Helps control weight
2. Makes smoking less enjoyable
3. Tends to promote a healthier diet
4. Helps to lessen the physiological and psychological consequences of stress
5. Teaches control
6. Makes healthy people aware of actual and potential control they have over their bodies (p. 30)

Cantor, Zillman, and Day (1978) found that the concentration of beta-endorphins (naturally occurring catecholamines) in the blood are increased as a result of exercise. This increase results in a feeling of euphoria. It has been postulated the feeling of euphoria may be due to increased oxygenation of the brain (Cantor et al., 1978).

Lack of exercise is a major risk factor in the development of coronary artery disease. In the United States alone, the annual death rate from cardiovascular disease has approximated one million in each of the last 10 years (Dunn, 1987). The known risk factors for developing cardiovascular disease such as age, sex, or heredity cannot be controlled, but other known risks such as sedentary life style, obesity, and smoking are possible to modify.

The government publication Healthy People: The Surgeon General's Report on Health Promotion and Disease Prevention (U. S. Department of Health, Education, and Welfare, 1979) stated that those individuals who adopt good health behaviors, of which exercise is a major factor, increase their potential for quality and quantity of life within the boundaries of heredity and environment. A 1978 Harris Poll indicated 92% of Americans believed good health behaviors do more to improve health than regular physician's appointments (Petersen-Martin & Cottrell, 1987).

In the same vein, Dunn (1987) estimated less than 50% of adult Americans engage in some form of regular

exercise. Many of these people are unaware of the safety and effectiveness of their exercise programs.

Sallis et al. (1986) reported a trend toward a slight increase in physical activity among Americans. However, the statistics show a discrepancy in people who regard good health behaviors as important (92%) and those who exercise regularly (less than 50%) (Dunn, 1987).

Exercise centers and literature on exercise are abundant in our current society, indicating a growing popularity in personal fitness. However, often exercise and/or the benefits of exercise are made to look effortless by advertisements. Unrealistic expectations of fitness early in an exercise program can lead to frustration and possibly even injury due to improper planning and conditioning (Dishman & Gettman, 1980). This frustration may cause cessation in the exercise program. Early cessation of exercise programs is a major barrier to developing a habit of regular exercise (Shepherd, Montelpare, Berridge, & Flowers, 1986).

A number of investigators have linked health beliefs to the adoption of positive health practices. Becker (1974) proposed the Health Belief Model (HBM) to

explain why people choose or do not choose health related practices. The major elements of the HBM (Becker, Maiman, Kirscht, Haefner, & Drachman, 1977) include:

1. The threat of illness and how harmful it is perceived by the individual
2. How valuable a certain behavior may be to reduce the threat
3. The estimated cost (physical, psychological, financial) of the proposed action (p. 349).

Barriers to exercise and benefits of exercise are perceived differently by different people. This study examined health beliefs in a healthy adult population.

The purpose of this study was to identify any differences in health beliefs in people who exercise regularly, people who exercise sporadically, and people who do not exercise at all.

Significance of the Study

The study of health-promoting behavior is appropriate for the development of nursing science (Laffrey & Isenberg, 1983). Health promotion and health education are basic functions of nursing. A health-promoting behavior receiving increasing attention is exercise. Exercise is a major determinant

of overall health and well being (Dishman & Gettman, 1980). Research has shown, however, the discrepancy between people who acknowledge the benefits of exercise and the percentage of people who actually perform regular physical exercise (Dishman & Gettman, 1980). By determining health beliefs of individuals and motives for continuing exercise programs, information can be obtained to increase exercise and other health-promoting activities.

This study investigated the differences between health beliefs and exercise patterns of healthy adults. There is a need to identify the factors that distinguish sedentary people from active people who exercise. This identification, along with perceived barriers versus benefits of exercise, will facilitate the establishment of health education programs and effective exercise programs for healthy adults. Nurses can have a major role in this establishment of health promotion programs.

Definitions

The following definitions were used for this study. The defined exercise patterns were assessed using respondents self-report.

Physical exercise - physical activity to develop fitness

Regular exercise - 20 to 30 minutes of physical activity three times a week

Sporadic exercise - physical activity less than the amount or frequency defined as regular exercise

No exercise - no physical activity to maintain/ improve health and fitness

Difficulty - the perception of the effort of a certain behavior change or the risk versus value of that behavior change (Sennott-Miller & Miller, 1987)

Health beliefs - ideas and attitudes about health that are measurable by statements of feelings regarding health or observed by behaviors regarding health. These beliefs were measured per subject self-report using the Health Perceptions Questionnaire (HPQ).

Hypotheses

1. There will be a difference in health beliefs between individuals who exercise regularly, those who exercise sporadically, and those who do not exercise at all.

2. There will be a difference in exercise patterns between individuals in different age groups.

3. There will be a difference in health beliefs between individuals in different age groups.

Chapter II

REVIEW OF THE LITERATURE

This review will describe the physical and psychological benefits of exercise and identify common barriers to exercise. The importance of health beliefs in determining exercise patterns will be identified. The theoretical basis for this study is provided by the Health Belief Model (HBM) as described by Becker (1974). This model will be discussed in detail. The literature review will conclude with an examination of previous studies relating to exercise and health beliefs.

According to Blumenthal, Williams, Needles, and Wallace (1982), physical exercise has become more popular in recent years as a means of health maintenance. Exercise has been shown to reduce tension, increase feelings of physical and psychological well-being, and improve self-image (Bartley & Belgrave, 1987). According to Rosch (1985), regular aerobic exercise can enhance the quality of life by improving an individual's mood, emotions, and ability to perform work or play.

Andersson and Malmgren (1986, p. 141) identified several physiological effects of physical activity. Some of these effects were:

1. Improved physical capacity for work
2. Increased muscular tone and strength
3. Cardiac and respiratory system efficiency
4. Improved mobility

It has been recognized for many years that as individuals increase in physical fitness, improvement in psychological fitness also tends to occur. The ability to cope with stress is positively related to physical fitness (Keller, 1980). Participants in regular exercise report "feeling better" and chronic endurance type activity has been shown to be effective in reducing or alleviating symptoms of depression (Morgan, Roberts, Brand, & Feinerman, 1970).

At least 50% of the deaths in the United States each year are due to unhealthy lifestyles, according to Healthy People (U.S. Department of Health, Education, & Welfare, 1979). The document Healthy People served to increase interest in a change in personal lifestyle for both prevention of disease and promotion of health (U.S. Department of Health, Education, & Welfare, 1979).

In the context of health, lifestyle has been defined as all those behaviors over which an individual has control and that affect a person's health and health risks (Walker, Sechrist, & Pender, 1987). Some components of a healthy lifestyle are: consuming a nutritious diet, practicing regular exercise, limiting stress, and eliminating unhealthy practices such as tobacco usage and chronic stress situations. Emphasizing an exercise program appears to be a logical way to promote healthy lifestyles. Exercise helps control weight, makes smoking less enjoyable, tends to promote a healthier diet, and helps lessen the physiological and psychological consequences of stress (Blomquist, 1981).

The U.S. Department of Health, acknowledging a link between habitual physical activity and decreased incidence of coronary heart disease, established the objective of at least 60% of the adult population 18 to 65 years of age regularly participating in physical activity by the year 1990 (Brooks, 1987). This will be difficult to measure, however, due to the lack of a valid, reliable, and practical instrument for measuring exercise in a large population (Brooks, 1987).

Benefits and barriers in adoption of coronary risk-reducing activities in a sample of 76 healthy adults was measured by Murdaugh and Hinshaw (1986). The subjects answered questions concerning smoking behaviors and exercise. The participants in this study were determined to be either oriented in the present or oriented in the future. The results of surveys of exercise behavior in this group of subjects revealed a positive relationship between benefits of exercise and a present orientation. These people tended to undertake exercise programs based on perceived benefits. The participants who were future-oriented tended to perceive the barriers of exercise as more important.

Clark (1986) cited our high-tech society as a barrier to exercise. The presence of elevators and stairs have caused a decline in walking. Walking has been called a prime form of exercise by a number of investigators (Clark, 1986; Conrad, 1988; Dunn, 1987).

Clark (1986) proposed that an exercise plan must concentrate on decreasing or removing barriers to exercise to be effective. Clark cited the following barriers to exercise:

1. Fatigue

2. Boredom
3. Depression
4. Attitudes of significant others
5. Lack of space
6. Inclement weather

Recent studies have shown the perceived difficulty of the proposed change in health behaviors is crucial to whether or not an individual undertakes the program of change (Sennott-Miller & Miller, 1987; Clark, 1986). Difficulty has been called a neglected factor in health promotion (Sennott-Miller & Miller, 1987). It has been found to be a strong variable in motivating individuals in long-term lifestyle changes. The difficulty factor has been viewed as a constant rather than a variable in most of the past research (Sennott-Miller & Miller, 1987). This means the behavior change has been viewed as difficult but the major thrust of any intervention has been to convince an individual that change is necessary and the recommended actions will be effective.

The motivation behind health behavior is very complex. Many factors such as education, age, socioeconomic status, gender, knowledge of the importance of physical activity, attitudes, values, and

perceived difficulty influence why people behave as they do. Laffrey and Isenberg (1983) reported that perceived importance of exercise was the major determinant in individuals undertaking physical activity during leisure time. They also reported the importance of age and education in predicting the amount of physical activity during leisure time.

Dotson and Stanley (1972) studied randomly selected male university students. The decision to engage in a physical activity was found to be based on the value of the activity as perceived by the individual. The higher the value, as perceived by the individual, the greater the likelihood of adopting a regular exercise program.

According to Garrity, Somes, and Marx (1978), there is an uncertainty that a particular action such as exercise will increase a person's health as perceived by an individual. The adoption of good health behaviors can be a balancing act with an individual attempting to satisfy the demands of a job, family, and friends as well as his or her own needs for pleasure and self-attainment (Petersen-Martin & Cottrell, 1987). If the perception of difficulty in initiating and continuing a behavior change as exercise

is thought to be higher than the perceived benefits, the behavior change is unlikely to occur (Sennott-Miller & Miller, 1987).

Laffrey and Isenberg (1983) studied a sample of 70 women, aged 24 to 65, to determine the relationship between attitudes toward exercise and participation in physical activity at leisure time. The sample was obtained from members of adult education classes (non-health related) who reported a mean number of years of education as 14. The results revealed a positive relationship between the amount of physical activity at leisure time and the perceived importance of physical exercise ($r = 0.53$; $P < 0.001$). The relationship between the amount of physical activity and the concepts of health value and locus of control were not supported in this study.

Pender and Pender (1986) studied attitudes, subjective norms, and intentions to participate in health behaviors. A convenience sample of 377 adults between the ages of 18 and 66 (40% male and 60% female) answered a questionnaire regarding beliefs concerning health behaviors. The results revealed a positive correlation between intentions to exercise and attitudes toward exercise. One limitation of this

study was that intentions to exercise were studied rather than actual exercise behaviors.

Langemo, Volden, Oechsle, and Adamson (1990) studied the differences in definition of health, perceived health status, and self-esteem in people who exercised regularly and those who did not exercise regularly. Langemo et al. (1990) defined regular exercise as repeated and effective use of physical activities to develop the body and the mind for health purposes. These authors used the measure of physical activity of 20 minutes or more three times a week to define regular exercise. A convenience sample of 497 adults was contacted, both exercisers and non-exercisers. The sample population was divided into three groups as described by Dishman (1982). The three groups were acquisition (beginning exercise), maintenance (regular exercise), and non-exercisers. The sample completed three questionnaires by mail (Laffrey Health Conception Scale, Philadelphia Geriatric Center Multilevel Assessment Inventory, and Rosenberg Self-esteem Scale). The data was analyzed using the one-way analysis of variance (ANOVA). Tukey's Honestly Significant Differences (HSD) test was utilized to compare group means. The results of this

study revealed the mean scores for the maintenance group were the highest, the acquisition group was next high, and the non-exercisers scored the lowest on conception of health. On the variable of perceived health status, the non-exercisers scored the lowest. The next lowest score was for the acquisition group and the highest mean score was for the maintenance exercisers. Langemo et al. (1990) found very little difference in the mean scores of the three groups on self-esteem.

Sidney, Niinimaa, and Shepherd (1983) reported a lack of knowledge in how attitudes toward physical activity are formed and how these attitudes could be modified. These authors cited limited research on the effects of aging and changing of attitudes on physical activity. Sidney et al. (1983) studied 78 subjects, 32 men and 46 women, to ascertain attitudes toward physical activity. The mean ages for the sample were 64.8 years for the men and 64.5 years for the women. This sample volunteered for a training regime consisting of four hours per week of walking, jogging, and other endurance-type activities. Attitudes of the group were measured both prior to the start of the endurance training and after three months of training.

Improvements in attitudes toward physical activity were seen in the sample group in addition to cardiorespiratory fitness and body fat composition.

In a study by Shepherd et al. (1986), older employees at a university were surveyed as to their exercise attitudes and practices. Eighty-six men and women participated in the study. The study consisted of providing health education classes to one group, having a control group with no classes offered, and a third group with exercise classes in addition to health education classes. The results showed no significant inter-group differences in attitudes.

The study undertaken by the investigator was based on the theoretical framework provided by the Health Belief Model (HBM). The HBM was created to explain why people behave in certain ways regarding health matters by examining factors that affect the process of decision-making. It was developed to explain preventive health behavior (Becker, 1974). Kasl and Cobb (1966) defined preventive health behavior as "any activity undertaken by a person believing himself to be healthy, for the purpose of preventing disease or detecting it in an asymptomatic stage" (p. 246).

The Health Belief Model suggests that prediction of health behavior depends mainly on two variables:

1. The value placed by an individual on a certain objective
2. The individual's estimate of the chance that a certain action will result in attaining that objective (Becker, 1974).

The HBM proposed that the likelihood of undertaking a particular health action depends on the individual's beliefs in four subjective dimensions:

1. The perceived degree of personal susceptibility to a particular condition
2. The perceived degree of severity that might result from contracting the condition
3. The chances of the recommended health action's potential benefits in reducing susceptibility and/or severity
4. The barriers (psychological and physical) related to the proposed action.

This creates a value--expectancy situation where the individual utilizes decision-making to weigh the perceived benefits of the behavior against the perceived barriers of the behavior (Becker, 1974).

Considerable research has been performed using the HBM as the theoretical foundation. Becker and his associates (1977) utilized the HBM to predict and explain mothers' adherence to a diet prescribed for their obese children. A sample of 182 mothers of children identified as obese by physicians in an ambulatory pediatric clinic at a large teaching hospital were interviewed. Data were collected on the mother's health opinions and concerns. They were divided into two groups, those with and those without an intervention. The intervention was information about health risks with obesity. The results with multiple regressions utilizing beliefs as a prediction of weight loss at the first followup visit was $r = .68$ indicating a positive correlation in mother's health beliefs and the child's success in the program. The HBM was the instrument utilized for the analysis of mothers' health beliefs.

O'Connell, Price, Roberts, Jurs, and McKinley (1985) utilized the HBM to predict exercise and diet behavior with adolescents. Sixty-nine obese and 100 non-obese participants were randomly selected from high school freshmen and sophomores. They completed questionnaires which served to elicit subjects' beliefs

about obesity, exercise, and dieting. The investigators predicted correctly 69% of the time when the respondent was in the obese or non-obese category according to health beliefs.

Stillman (1977) and Hallal (1982) studied health beliefs about breast cancer and breast self-examination (BSE). The sample for Stillman's study consisted of 122 randomly selected college women. In an analysis of the threat of cancer and the practice of BSE, Stillman found that approximately one-third of the participants had high beliefs and practice rates and about one-fourth had high beliefs but never practiced BSE. Hallal studied 207 adult women of which 165 (80%) reported practice of BSE and 42 (20%) said they never practiced BSE. Of the 165 who claimed practice of BSE, only 25% performed the exam regularly once a month. In their studies both Stillman and Hallal utilized the Health Beliefs Instrument developed by Stillman in 1977. The results supported the relationship between health beliefs and being a practicer of BSE.

Brown, Muhlenkamp, Fox, and Osborn (1983) compared values and health beliefs of 63 randomly selected healthy adults from a community church group and a group of secretaries. They investigated primarily the

engagement in health promotion and health restoration activities. No major differences in health beliefs were found between these two groups.

A study by Walsh (1985) indicated a positive relationship between health beliefs and practices in a group of runners. The sample in this study was 150 runners and 150 nonrunners randomly picked from a university. The instruments utilized to measure health beliefs were the Health Value Scale and the Walsh Health Behaviors Questionnaire. The results indicated an increase in health practices undertaken by the runner group with the two-sample t test for independent groups ($p < .001$). The study also revealed the runners placed a higher value on their own health than did nonrunners ($p < .019$). The nonrunners may or may not have been sedentary in their lifestyles. The group of nonrunners had those who ran or jogged more than two miles a day, three days a week eliminated. Participants in other forms of exercise were retained in the study. Walsh (1985) suggested future research needs to be done to see if these results are similar in studies of adults in the general population.

Duffy (1988) utilized the HPQ to evaluate health-

262 women employees of a large university. The HBM (Becker, 1974) was utilized as the theoretical framework. Results of the study revealed a positive correlation in health beliefs and the practice of health-promoting lifestyle activities for participants on each of the subscales (Duffy, 1988).

While the HBM and the HPQ have been utilized to explain health beliefs in many studies, they have not been utilized in conjunction with each other as frequently. The substance of the theoretical model and the HPQ are very similar. Neither the model nor the instrument have been utilized extensively to explain why some people undertake programs of regular exercise and others do not. With evidence pointing to the overall benefits of exercise, it is important to study why people choose or do not choose to exercise regularly. Therefore, this author proposed a study of health beliefs relating to regular exercise, sporadic exercise, and no exercise.

Chapter III

METHODOLOGY

Subjects

The sample in this study were nurses belonging to an alumni association of a diploma school of nursing in the Midwest. The age group of female participants was restricted to those 20 to 65 years of age. The sample was selected randomly from the 500 members of the association using the simple random sampling technique. The sample of 200 received questionnaires through the mail. Of the returned questionnaires, 112 were usable for this study.

Instruments

Data were collected on health beliefs and patterns of exercise of healthy adults. The Health Perceptions Questionnaire (HPQ) by Ware (1976) was utilized for data collection. (See Appendix B.) This tool provided information on the following six variables:

1. Current health - the degree of health or illness as perceived by the individual
2. Prior health - has previous health been perceived as favorable (healthy) or unfavorable (unhealthy)

3. Health outlook - the individual's prediction of the future related to health
4. Health worry/concern - the degree of worry/concern expressed by the individual about his/her health
5. Resistance-susceptibility - the individual's perception of resistance or susceptibility to illness
6. Rejection of sick role - the individual's usual response to illness in terms of acceptance of the sick role (Ware, 1976)

The HPQ is a self-administered instrument of 32 questions developed to provide information concerning an individual's beliefs regarding various aspects of his or her health. Examples of statements used in each of the subscales of the HPQ follow:

1. Current health - defined by responses to questions such as, My health now is better than it has ever been
2. Prior health - defined by responses to questions such as, I was once so sick I thought I might die

3. Health outlook - defined by responses to questions such as, I probably will be sick often in the future
4. Health worry/concern - defined by responses to questions as, I never worry about my health
5. Resistance-susceptibility - defined by responses as, I seem to be sick easier than others
6. Rejection of sick role - defined as, I do not like to visit the doctor

A five-point Likert scale was used to rank responses to the questions contained in this instrument. The five response classes were given a numerical code of from one to five and were defined as definitely false, mostly false, don't know, mostly true, and definitely true. Stronger health beliefs correlated with a score nearer five. The instrument was designed to be completed by the respondent in approximately seven minutes. There were instructions on how the responses were to be marked on the questionnaire sheet. It was noted on the instruction sheet that there were no right or wrong answers. The responses were to be based on the respondent's perceptions related to the questions.

The subscales of the HPQ were further broken down into questions associated with each of the subscales. This was done to determine the strength of each of the subscales in explaining health beliefs of the respondents. Questions were grouped according to similarity by the author of the tool (Ware, 1976). There were nine questions that were related to current health (1, 4, 9, 12, 17, 22, 26, 30, and 32). Prior health was described by three questions (11, 19, and 28). Health outlook was made up of responses to four questions (5, 10, 18, and 23). There were four questions that were related to health worry/concern (6, 13, 20, and 24). Resistance-susceptibility was made up of responses to four questions (3, 7, 15, and 29). Rejection of the sick role was described by eight questions (2, 8, 14, 16, 21, 25, 27, and 31).

The HPQ, Form I, was developed by Ware in association with the National Center for Health Services Research (NCHSR) in 1976. This survey was modified and its present form, Form II, was utilized in this study (1976). Analyses by Ware (1976) came from five field tests involving 2,000 adults from the general population during the years 1973 through 1975. The tests were done in counties in southern Illinois.

Mixed sampling designs were utilized to ensure representative households.

In the original studies, questionnaires were mailed and the return rate was approximately 37%. In three of the field tests interviewers took questionnaires to designated households and assisted in the completion of the questionnaires. This improved the response rate to 62, 82, and 95% (Ware, 1976).

Test-retest reliability estimates were obtained from two field tests using product-moment correlations between scores obtained approximately six weeks apart from the same population. Tests of reliability of individual items have been performed with correlations ranging from 0.19 to 0.77 with the majority between 0.4 and 0.6. Test-retest reliabilities were also obtained and ranged from 0.41 to 0.86. Two-year stability coefficients were done with the range for all subscales from 0.45 to 0.63 (Ware, 1976). Internal consistency for the scales was ascertained in four field tests using Cronbach's alpha-coefficient (Ware, 1976).

Validity of the questionnaire scales was measured using factor analytic studies. A second method to measure validity was performed and consisted of relationships between the scales and other variables

that exist if the scales actually measure what they are stated to measure (Ware, 1976).

In a review of instruments utilized for health appraisal, Engel (1984) described Ware's HPQ as a valid tool for measuring health beliefs. This author reported the internal reliability of the HPQ in one field study was estimated at .89 or .90 with test-retest reliability after one year (N = 1,200) to be .88. Engel (1984) identified validity factors for the HPQ when correlated with diverse subjects such as strenuous exercise, general exercise, anxiety, depression, positive well being, and current life events score. No data on correlational statistics were included in this review.

Duffy (1988) reported results on each subscale of the HPQ utilizing Cronbach's alphas:

current health	.89
prior health	.76
health outlook	.75
health worry/concern	.68
rejection of the sick role	.69
resistance/susceptibility to illness	.79

In addition to the HPQ, a tool to collect demographic data was developed by the investigator

which also asked for the individual's response to the question of usual pattern of exercise. The choices were regular exercise, sporadic exercise, and no exercise as described previously. The age, nursing position, type of employment, and the highest educational level attained were also determined per self-report on this questionnaire (see Appendix A).

Procedures

The investigator presented the research proposal to the Institutional Review Committee at Drake University, the administration of the Medical Center which represented the Alumni Association, and the President of the Alumni Association. After receiving approval, the investigator proceeded with a pilot study prior to the major collection of data.

A sample of 30 randomly selected subjects from the predetermined population received the questionnaire through the mail as a pilot study. The cover letter (Appendix A) explained the study and asked for participation by completion of the questionnaire. Comments regarding the length of the questionnaire, the ease of completion, the clarity of the statements, and any general comments the participant might choose to make were also requested. This information was

utilized to make revisions of the questionnaire and to predict the response rate of the study. The pilot subjects were included in the random selection of the target population for the study and, if selected, received the revised questionnaire. A stamped, self-addressed envelope was included for convenience in returning the cover letter with comments and the questionnaire.

The results of the pilot study were analyzed prior to the beginning of the research study. A 63% return rate was received from the pilot study. The cover letter was revised to include the author of the instrument utilized and information concerning the time necessary to complete the tool. A statement assuring anonymity was added to the revised cover letter (see Appendix A). The tool utilized in the study (Ware, 1976) was not altered. The questionnaire developed by the investigator to ascertain exercise patterns was revised. The section containing exercise data received only editorial changes. The variables were changed from asking only age and gender to asking age, type of employment, nursing position, and level of education (Appendix A).

The revised questionnaires and cover letter (Appendix A) were mailed to the sample of 200 individuals randomly chosen from the members of the alumni association. Self-addressed and stamped envelopes were included for the participants' convenience. Completion and return of the questionnaire constituted consent. Anonymity was maintained as no names were utilized on the questionnaires. The questionnaires were returned to the investigator at her home address. The deadline for returning the questionnaires was two weeks after the mailing date. The results of the study were published in the Spring 1991 edition of the Alumni Bulletin which is mailed to all members of the alumni association.

Chapter IV

ANALYSIS

The primary purpose of this study was to determine if there was a difference between health beliefs and exercise patterns in adults. Additional variables and their association with health beliefs and exercise patterns were also investigated. These variables included type of nursing position, present work status, age group, and educational background.

Data were generated in the form of a questionnaire sent to members of a nurses' alumni association. The tool utilized was the Health Perceptions Questionnaire (HPQ) by John W. Ware, Jr. The demographic data and the participant's current exercise pattern were also determined by utilizing a second questionnaire.

Two hundred questionnaires were mailed to a random sample of the 500 members of the nurses' alumni association. Of these 200 questionnaires, 123 were returned in the two-week period specified in the cover letter. This was a 61% return. Of the 123 returned questionnaires, 8 were eliminated due to only one side of the questionnaire being completed and 3 were eliminated due to no exercise pattern being identified.

This left a total of 112 usable questionnaires. This constituted a 56% return for interpretation of data.

Demographic data were investigated to determine characteristics of the sample. An overview of sample characteristics may be found in Tables 1 through 3 and Figure 1.

Table 1

Frequency of Age

Age Range	Frequency
20-30	7
30-40	25
40-50	31
50-60	27
60-65	22

Table 2

Frequency of Position

Position	Frequency
Staff	51
Management	23
Education	8
Other	9
No answer	21

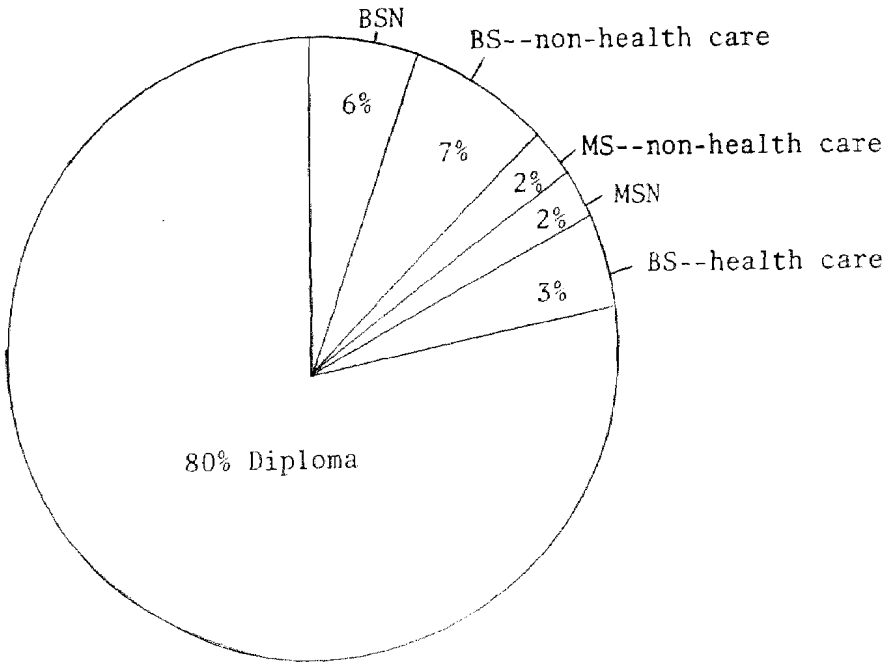
Table 3

Frequency of Employment

Employment	Frequency
Part time	38
Full time	49
Not employed	25

Figure 1.

Highest Educational Level Attained (Basic Education Diploma in Nursing)



Respondents ranged in age from 21 to 65. All were women. There was only one male member of the alumni association. He did not participate as no address was listed for him. A sizable majority (74%) of the sample ranged in age from 30 to 60 years of age.

The participants were from many different areas of the United States, with most from the Iowa area. This probably is not significant as the literature points to lack of exercise and a sedentary lifestyle as a major problem throughout the United States.

Respondents also reported their current position in nursing as management, staff, and education. The amount of time currently working was reported as full-time, part-time, or no longer working in nursing.

The highest education level reached was reported. It is important to note the basic education was a diploma in nursing for all respondents. Twenty percent of the respondents reported educational attainment higher than the diploma education level.

The sample was divided into three groups according to exercise pattern reported by the participant. The groups were the exercise groups of regular, sporadic, and no exercise.

The majority of respondents reported participation in exercise with 41.1% reporting regular exercise, 46.4% sporadic exercise patterns, and 12.5% stated they did not exercise at all. Table 4 reflects exercise patterns related to the demographic variables studied by the investigator.

Table 4

Exercise Patterns Related to Demographics

	Regular Exercisers (N = 46)	Sporadic Exercisers (N = 52)	Non Exercisers (N = 14)
Mean age (years)	47.6	56.8	46.6
Employment			
Part time	14	18	6
Full time	19	24	6
Not working	13	10	2
Position			
Staff	17	24	10
Management	7	14	2
Education	4	3	0
Other	3	3	0
Not working	13	10	2

The Health Perceptions Questionnaire (HPQ) was developed to measure individual beliefs concerning health. The subscales were published by the author of the tool (Ware, 1976) and may be found in Appendix C. A score for each of the subscales of the HPQ was determined for each respondent. Respondents were grouped according to self-reported exercise pattern. Mean scores were calculated for each exercise category.

The ranges on the subscales of the HPQ were 2.88-4.10 for the regular exercise group, 2.97-4.16 for the sporadic exercise group, and 2.92-4.02 for the no exercise group. Table 5 reflects the mean scores on each of the subscales for each of the exercise groups.

Table 5

Subscale Scores of HPQ by Exercise Pattern

	Regular Exercisers (N = 46)	Sporadic Exercisers (N = 52)	Non Exercisers (N = 14)
Current health	3.46	3.33	3.22
Prior health	4.03	4.01	3.40
Health outlook	3.89	3.93	3.72
Health worry/concern	3.57	3.39	3.45
Resistance	4.10	4.16	4.02
Rejection of sick role	2.88	2.97	2.92

The mean scores on each of the subscales by age groups can be found in Table 6.

Table 6

Subscale Scores of HPQ by Age Groups

	20-30	30-40	40-50	50-60	60-65
Current health	3.76	3.36	3.39	3.29	3.34
Prior health	5.00	3.89	4.02	3.89	3.65
Health outlook	4.00	3.92	3.98	3.95	3.60
Health worry/concern	3.29	3.74	3.39	3.46	3.57
Resistance	4.04	4.05	4.19	4.17	4.01
Rejection of sick role	2.19	2.97	2.76	2.98	2.94

Analysis of Hypotheses

Hypothesis 1. There will be a difference in health beliefs between individuals who exercise regularly, those who exercise sporadically, and those who do not exercise at all.

To test this hypothesis, a one-way analysis of variance (ANOVA) was used. The F values ranged from .28 to 1.62 with the p values exceeding the established

level of probability. The results of this analysis may be found in Table 7.

Table 7

ANOVA (Comparing HPQ for Exercise Groups)

	Sum of Squares	Mean Square	F value	DF	p
Current health	63.11	31.55	1.62	2	.20
Prior health	42.37	21.19	1.53	2	.22
Health outlook	8.09	4.04	0.56	2	.57
Health worry/concern	13.79	6.90	2.08	2	.73
Resistance	3.58	1.79	0.28	2	.76
Rejection of sick role	15.37	7.69	0.99	2	.37

No statistical differences in the exercise groups on health beliefs were found. Thus, Hypothesis 1 was rejected. There was no significant difference in health beliefs between individuals in each of the exercise groups.

Hypothesis 2. There will be a difference in exercise patterns between individuals in different age groups.

A chi-square test statistic was utilized to compare differences between the age groups and the exercise patterns. The sample was divided into five age groups for the analysis. The value of chi-square was 5.049, df 8, probability 0.752. The hypothesis was rejected as the chi-square value exceeded the established level of probability. Thus, there was not a significant difference between age groups and exercise patterns in this study.

The validity of this test, as 46% of the cells had expected counts less than five, may be in question, however. Further analysis by collapsing the categories to increase cell size may be indicated. See Table 8 for a graphic presentation of this analysis.

Hypothesis 3. There will be a difference in health beliefs between individuals in different age groups.

To test this hypothesis, a one-way analysis of variance (ANOVA) was used. The F values ranged from 0.34 to 3.09. The results of this analysis may be found in Table 9.

Table 8

Table of Age by Exercise

Age	Exercise			
Frequency Percent Row Pct Col Pct	Regular 1	Sporadic 2	None 3	Total
1 20 - 30	4 3.60 66.67 8.89	1 0.90 16.67 1.92	1 0.90 16.67 7.14	6 5.41
2 30 - 40	10 9.01 40.00 22.22	10 9.01 40.00 19.23	5 4.50 20.00 35.71	25 22.52
3 40 - 50	11 9.91 35.48 24.44	17 15.32 54.84 32.69	3 2.70 9.68 21.43	31 27.93
4 50 - 60	10 9.01 37.04 22.22	14 12.61 51.85 26.92	3 2.70 11.11 21.43	27 24.32
5 60 - 65	10 9.01 45.45 22.22	10 9.01 45.45 19.23	2 1.80 9.09 14.29	22 19.82
Total	45 40.54	52 46.85	14 12.61	111 100.00

Frequency Missing = 1

Table 9

ANOVA (Comparing HPQ for Age Groups)

	Sum of Squares	Mean Square	F value	DF	p
Current health	89.72	22.43	1.14	4	.34
Prior health	80.13	20.03	1.45	4	.22
Health outlook	36.03	9.01	1.27	4	.29
Health worry/concern	13.07	3.27	0.96	4	.43
Resistance	8.72	2.18	0.34	4	.85
Rejection of sick role	89.68	22.42	3.09	4	.02

There were no significant differences in health beliefs between age groups on the HPQ except for respondents in the age groups 20-30 and 40-50 on the subscale of rejection of the sick role. The F value for this subscale was 3.09 with a p value of 0.02. This was a significant finding at the .05 level. Tukey's Honestly Significant Differences (HSD) post hoc test was utilized to compare group means in view of the significant p value in rejection of the sick role.

Therefore, there was a difference in one of the subscales of the HPQ (rejection of the sick role) and two age groups (20-30 and 40-50). Respondents in these

two age groups did not appear to see their ability to reject the sick role as strongly as those in the other three age groups.

Chapter V

DISCUSSION AND CONCLUSIONS

The purpose of this investigation was to determine if there was a difference in health beliefs of individuals and their self-reported exercise patterns. The theoretical framework was provided by the Health Belief Model as proposed by Becker (1974). This model is based on the concept of illness prevention and has been utilized in many studies (Duffy, 1988; Hallal, 1982; Mikhail, 1982; O'Connell et al., 1985; Pender, Walker, Sechrist, & Frank-Stromborg, 1990). This model has been utilized with both a healthy population and those with health problems and/or health risks.

The tool used for this study was Ware's (1976) Health Perceptions Questionnaire (HPQ). The tool is divided into six subscales and 32 questions concerning several ideas and beliefs about health. The HPQ has been validated in many field tests (Duffy, 1988; Engel, 1984; Ware, 1976).

For this investigation, 112 individuals agreed to participate in the study by returning the questionnaires received through the mail. The sample were members of a nurses' alumni association. They

were a homogeneous group, all having the same basic diploma nursing education. They varied as to age, type of employment, type of position, and further education. Highest educational level attained was ascertained rather than current educational pursuit. This may have skewed results as those currently enrolled in educational programs may have perceived exercise and health beliefs differently than those not currently pursuing higher education.

Each age group was represented in the study with individuals in each of the self-reported exercise groups. Only 12.5% of the sample indicated they did not exercise at all. The remainder of the sample reported participation in either regular exercise (41.1%) or sporadic exercise (46.4%). This is a high percentage of exercisers which may relate to the fact that as nurses they are more health conscious than the general public.

The literature points to a significantly lower percentage of exercisers than reported in this study. Dunn (1987) found less than 50% of Americans participated in physical activity. Langemo et al. (1990) stated approximately 43% of males and 38% of women exercise regularly. Long and Haney (1986)

reported 42% of the population in Canada did not exercise regularly.

Of the 112 participants, 38 worked part-time, 49 worked full-time, and 25 were not currently working. There were no real differences in this study in the type of employment and whether or not individuals exercised. The figures for exercise patterns according to type of employment were reported in Table 4. An individual's work schedule and whether or not they exercise has not been specifically studied. The value one places on exercise as a component of health and the time factor has been studied (Laffrey & Isenberg, 1983; Pender et al., 1990; Walsh, 1985). A perception of lack of time for the working person may interfere with establishing a program of exercise. Also, the perceived benefits versus the perceived barriers often play a part in finding the time for exercise.

One advance in recent years that may increase the numbers of employed individuals that participate in exercise programs is work site exercise centers. These exercise and health-promotion centers make exercise and other health-related programs more accessible to employees.

The variable of nursing position revealed that 56% of the respondents who reported their types of employment were staff nurses. Of these respondents, 80% reported participation in some form of exercise. Again, this may relate to the sample being nurses and probably more health conscious than the general public.

The majority of the sample from the nurses' alumni association reported both positive exercise patterns and positive health beliefs. This is noted in the moderate to high scores of the respondents on the subscales of the HPQ for both exercise and health beliefs. While this was not the expected finding, it is reasonable due to the health orientation of the group. Nurses receive a myriad of health-related information in their basic nursing programs. They also learn about good health measures by witnessing the end results of bad health practices in some of their hospitalized clients.

The Health Perceptions Questionnaire (HPQ) was divided into six subscales and then further divided into 32 questions that represented the subscales. The range of scores on the subscales for the three exercise groups were 2.88-4.10 for the regular exercise group, 2.97-4.16 for the sporadic exercise group, and

2.92-4.02 for the no exercise group. These moderate to high scores on the HPQ, along with a majority of the respondents participating in exercise, indicate a positive health orientation in this population.

Hypothesis 1 established for this study was: There will be a difference in health beliefs between individuals who exercise regularly, those who exercise sporadically, and those who do not exercise at all. A one-way analysis of variance (ANOVA) was utilized to test this hypothesis. Hypothesis 1 was rejected as there was not a difference in health beliefs and self-reported exercise patterns for this sample. Although the hypothesis was not supported, finding strong health beliefs and good exercise patterns in this sample was a positive factor. The literature supports that individuals who exercise have stronger health beliefs than nonexercisers (Langemo et al., 1990; Laffrey & Isenberg, 1983). Building on strong health beliefs may increase motivation for developing regular exercise habits. Education geared in this direction may be more effective in promoting the development of more positive exercise patterns for individuals.

Hypothesis 2 stated: There will be a difference in exercise patterns between individuals in different

age groups. A chi-square statistical test was utilized for this analysis. The individual's age did not appear to affect the self-reported exercise pattern in this study. Again, as the majority of respondents reported participation in exercise, it may be a function of education and experience that the numbers were so high.

Hypothesis 3 was: There will be a difference in health beliefs between individuals in different age groups. The ANOVA statistical method was utilized for this analysis. Statistics revealed the age groups of 20-30 and 40-50 demonstrated much lower scores on the subscale, "rejection of the sick role," than on the other subscales of the HPQ. The F value was 3.09, and $p = 0.02$. This was a significant finding at the .05 level. This was an interesting finding that would take further analysis to completely explain. On the whole, all of the age groups had a lower score on this subscale, but the 20-30 and 40-50 age groups were the lowest. One theory is that with the background in nursing that the respondents had in common, the sick role with its physical and psychological implications is more known to them than it is to the general public. This group of individuals may recognize more variables

in the ability to reject the sick role than the general public. It must be noted that this finding may also be attributable to chance.

Implications for Nursing Practice

Statistics have demonstrated a high percentage of people agree to the positive effects achieved by regular physical exercise. Less than one-half of Americans engage in regular exercise, however. Of the individuals that begin exercise programs, a small percentage continue the practice on a regular basis (Dishman, 1982; Langemo et al., 1990). On the other hand, a high percentage of individuals recognize the benefits of regular exercise to general health and well-being (Laffrey & Isenberg, 1983; Brown et al., 1983; Walsh, 1985).

A number of variables have been implicated as the reasons why so many believe in the value of exercise and only approximately one-half of these individuals actually participate in regular exercise. Some of these variables are perceived value of exercise, perceived difficulty in undertaking a program of regular exercise, and benefits of exercise versus barriers. Explaining these variables may increase the number of individuals who both undertake exercise

programs and maintain these programs. Nurses are in a position to both research the above stated variables and to conduct educational programs to facilitate individuals beginning exercise programs.

Nurses have included education as one of their major roles through the years. Teaching of clients has had both an illness and a wellness orientation. With wellness perceived as an important issue, nurses could be at the forefront in developing exercise and other health-oriented programs such as stress management, nutrition, and smoking cessation. A variety of health-teaching programs could be made available to the public on exercise and other health-oriented topics. The nurse providing the program of education could be remunerated by his/her business or receive private payment. Nursing in this era has more positions and roles available than at any other time in history. A nurse can become an entrepreneur and create a much needed business in health promotion or dispense health-oriented information as a part of his/her existing job.

Another way in which nurses can promote exercise and other health-promotion activities is by example. Literature has shown exercise promotes both physical

and psychological health (Blomquist, 1981; Cantor et al., 1978; Rosch, 1985). A nurse who practiced exercise and promoted its benefits would be assisting others as well as self.

Limitations of the Study

The subjects for this study were a homogeneous group. This contributed to the findings being so similar for the respondents. The participants were all nurses, which may have accounted for the positive health orientation demonstrated by the group. A majority of the participants scored high in health beliefs and answered yes to participation in either regular or sporadic exercise. These scores may not be representative of the general public. This study replicated in a less homogeneous sample would provide more useful information.

The sample was made up entirely of women. This, too, may reduce the generalizability of the study. Literature has pointed to the differences in establishing and maintaining exercise programs for men and women (Dishman & Gettman, 1980; Langemo et al., 1990; Sidney et al., 1983). Sidney et al. (1983) also report some basic differences in health perceptions

between men and women. Including both genders in a similar study would add to the usefulness of the data.

The inclusion of more variables in the study would increase the body of knowledge received from the study. Only demographic variables were included in this study. Variables such as determining acquisition as well as adherence to regular exercise programs, benefits versus barriers to developing regular exercise patterns, the time factor, motivation, perceived difficulty in initiating regular exercise habits, and the value placed on exercise by the individual would provide more descriptive data.

Utilization of multiple instruments in a similar study would increase the data generated. The use of only one instrument (HPQ) may have decreased the validity of this study. The literature points to many variables accounting for the decision to exercise or not to exercise (Dishman & Gettman, 1980; Pender et al., 1990; Long & Haney, 1986). To paraphrase Long and Haney (1986): Individuals have values toward physical exercise more diverse than health alone.

A major threat to external validity which existed in this study was the homogeneity of the population.

The similarity of this population reduced its generalizability to other groups.

The likelihood of committing a Type I error was increased in this study by utilizing a univariate statistical analysis rather than a multivariate statistical analysis. The level of probability for this study was set at .05. By setting the alpha level at .05, the possibility of a Type I error may have been enhanced.

Recommendations for Further Study

This study added to the literature on a need for exercise and other positive health practices to improve the general well-being of adult Americans. The sample in this study had both positive health beliefs and the majority participated in regular or sporadic exercise. These findings may be a function of the health consciousness of this group as they all were nurses. A method to carry these positive health beliefs and good exercise patterns over to the general public needs to be found.

A less homogeneous sample for this study would be appropriate. Also, replicating this study with a non-health-oriented population would give additional data. As work-site health promotion centers are becoming more

prevalent, a comparison of two samples, one with and one without a work-site health center would provide useful information.

Investigating more variables would enhance a study similar to this one. Some of the variables that would provide additional information are perceived difficulty in beginning an exercise program, perceived benefits versus barriers to exercise, the time factor, the efficacy of the "buddy system" (exercising with a friend), and maintaining an exercise program.

While the HPQ has been demonstrated as a valid tool in establishing health beliefs, utilizing additional tools to examine health beliefs would enhance the study. Some possible tools are:

1. Health Conception Scale (Laffrey, 1985)
2. Walsh Health Behaviors Questionnaire (Walsh, 1985)
3. Health Promotion Model (Pender, 1987)
4. Exercise Benefits/Barriers Scale (Sechrist, Walker, & Pender, 1987)
5. Multidimensional Locus of Control Scale (Wallston, Wallston, & DeVellis, 1978)

A combination of tools would add credibility to the study while providing additional data.

The literature points to the difficulty in maintaining a program of regular exercise as being more difficult than beginning the program (Dishman & Gettman, 1980; Brown et al., 1983). A longitudinal study to measure compliance of individuals beginning an exercise program would also provide additional information.

In conclusion, while this study did not find significant differences in health beliefs and self-reported exercise patterns in this sample of nurses, it did add to the growing literature on the need for exercise and other health-promoting behaviors. As this sample of nurses scored high on both exercise and health beliefs, it may indicate the possible position of nurses as leaders in the development of exercise and other health-related programs for the general public.

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Appendix A

LETTERS OF CONSENT

March 1990

Dear Mercy School of Nursing Alumnus:

I am a graduate student at Drake University and a practicing registered nurse. I am conducting a research study on the relationship between health beliefs and exercise patterns as partial fulfillment of degree requirements. I am randomly selecting your name as one of 30 alumni to receive the questionnaire prior to the study as a pilot project. Your permission to participate in the study is concluded upon completion of this questionnaire. Those chosen for the pilot may also be randomly selected to receive the questionnaire for the research study of 200 alumni.

Please write any comments on the cover letter or in the margins of the questionnaire as to the length of the questionnaire, the clarity of the statements, the ease of completion, or any other comments you might have pertaining to the form or content of the questionnaire. The information will help this investigator in the data collection segment of the study. Please return the questionnaire with the cover letter in the enclosed self-addressed stamped envelope within two weeks of the mailing date.

Your information concerning this questionnaire will be appreciated. Thank you in advance.

April 1990

Dear Mercy School of Nursing Alumnus:

I am a graduate student at Drake University and a practicing registered nurse. I am conducting a research study on the relationship between health beliefs and exercise patterns as partial fulfillment of degree requirements. I am randomly selecting 200 alumni to whom I will send the attached questionnaire. I have chosen nurses as my sample population due to the great impact nurses can have on health education. I would like your participation in this study.

The enclosed questionnaire is a published tool by John E. Ware, Jr. It requires seven minutes of your time for completion. Your permission to participate in this study is concluded upon completion of the questionnaire. The results of this study will be given in writing at the conclusion of this endeavor.

If you choose to participate in this study, please answer the following questions and return along with the questionnaire in the stamped, self-addressed envelope within two weeks of the mailing date. Complete anonymity will be maintained.

Thank you.

TEAR HERE

- -

Please circle the number that best describes your usual pattern of exercise.

1. Regular exercise, at least 20-30 minutes three times a week.

2. Sporadic exercise, less often than three times a week and/or a shorter duration.

3. I do not exercise at all.

Employment in Nursing _____
Part-time _____
Full-time _____
Not employed _____

Age 20-30 _____ 50-60 _____
30-40 _____ 60-65 _____
40-50 _____

Nursing Position
Staff _____
Management _____
Education _____

Education
Diploma _____
Other _____
(please specify)

Appendix B

HEALTH PERCEPTIONS QUESTIONNAIRE (HPQ)

Ware, John E., Jr.

PLEASE READ EACH OF THE FOLLOWING STATEMENTS, AND THEN CIRCLE ONE OF THE NUMBERS ON EACH LINE TO INDICATE WHETHER THE STATEMENT IS TRUE OR FALSE FOR YOU. THERE ARE NO RIGHT OR WRONG ANSWERS.

If a statement is definitely true for you, circle 5.
If it is mostly true for you, circle 4.
If you don't know whether it is true or false, circle 3.
If it is mostly false for you, circle 2.
If it is definitely false for you, circle 1.

SOME OF THE STATEMENTS MAY LOOK OR SEEM LIKE OTHERS. BUT EACH STATEMENT IS DIFFERENT, AND SHOULD BE RATED BY ITSELF.

	Definitely True	Mostly True	Don't Know	Mostly False	Definitely False
A. According to the doctors I've seen, my health is now excellent	5	4	3	2	1
B. I try to avoid letting illness interfere with my life	5	4	3	2	1
C. I seem to get sick a little easier than other people	5	4	3	2	1
D. I feel better now than I ever have before	5	4	3	2	1
E. I will probably be sick a lot in the future	5	4	3	2	1
F. I never worry about my health	5	4	3	2	1
G. Most people get sick a little easier than I do	5	4	3	2	1
H. I don't like to go to the doctor	5	4	3	2	1
I. I am somewhat ill	5	4	3	2	1
J. In the future, I expect to have better health than other people I know	5	4	3	2	1

	Definitely True	Mostly True	Don't Know	Mostly False	Definitely False
K. I was so sick once I thought I might die	5	4	3	2	1
L. I'm not as healthy now as I used to be	5	4	3	2	1
M. I worry about my health more than other people worry about their health	5	4	3	2	1
N. When I'm sick, I try to just keep going as usual	5	4	3	2	1
O. My body seems to resist illness very well	5	4	3	2	1
P. Getting sick once in a while is a part of my life	5	4	3	2	1
Q. I'm as healthy as anybody I know	5	4	3	2	1
R. I think my health will be worse in the future than it is now	5	4	3	2	1
S. I've never had an illness that lasted a long period of time	5	4	3	2	1
T. Others seem more concerned about their health than I am about mine	5	4	3	2	1
U. When I'm sick, I try to keep it to myself	5	4	3	2	1
V. My health is excellent	5	4	3	2	1
W. I expect to have a very healthy life	5	4	3	2	1
X. My health is a concern in my life	5	4	3	2	1
Y. I accept that sometimes I'm just going to be sick	5	4	3	2	1
Z. I have been feeling bad lately	5	4	3	2	1
AA. It doesn't bother me to go to a doctor	5	4	3	2	1
BB. I have never been seriously ill	5	4	3	2	1
CC. When there is something going around, I usually catch it	5	4	3	2	1
DD. Doctors say that I am now in poor health	5	4	3	2	1
EE. When I think I am getting sick, I fight it	5	4	3	2	1
FF. I feel about as good now as I ever have	5	4	3	2	1

Appendix C

HEALTH PERCEPTION MODEL SUBSCALES

(Used with permission)*

Current Health

Prior Health

Health Outlook

Health Worry/Concern

Resistance--Susceptibility

Rejection of the Sick Role

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